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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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|-----------------|-------------|----------------------|---------------------|------------------|

10/500,406

03/21/2005

Colin Kennedy

Serie 5723

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05/30/2007

AIR LIQUIDE

Intellectual Property

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HOUSTON, TX 77056

EXAMINER

PATEL, TAYAN B

ART UNIT

PAPER NUMBER

1709

MAIL DATE

DELIVERY MODE

05/30/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/500,406

Applicant(s)

KENNEDY ET AL.

Examiner

Tayan B. Patel Esq.

Art Unit

1709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 6/23/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

IDS

1. The International Search Report for PCT/EP92/14909 of the IDS filed 23 June 2004 has been considered but will not be printed on the face of the patent, if one is to issue, because an International Search Report is not a published document available to the public.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Here, claim 24 recites "the method of claim 22" but claim 22 is an apparatus claim. It is unclear if claim 24 is an apparatus claim or attempting to recite a method.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1709

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 11-20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo et al. (US 6818105) in view of Gregory (US 4450852).

With regard to claims 11-13, Tojo et al. discloses an apparatus that generates fluorine gas to a semiconductor processing system (See column 13, lines 54-67) comprising:

a) an electrolytic cell, 2, for the electrolysis of hydrogen fluoride to produce fluorine gas, wherein the cell further comprises an electrolytic bath, 3, said bath further comprising hydrogen fluoride-containing molten salt; (See column 6, lines 1-24; See also figure 1)

b) a gas storage means, 18, (See column 6, lines 40-50) comprising a substitute/another gas of nitrogen fluoride (well known semiconductor processing gas in the art) (See also column 1, lines 12-30; See also figure 1); &

c) an electrolytic cell detector, 8 and/or 10, that detects the state/operating conditions of the bath and cell; wherein 8 is a liquid level probe and 10 is a temperature detecting means; (See column 6, lines 1-24; See also figure 1).

However, Tojo et al. fails to explicitly disclose a gas switching section acted upon by a controller in connection with Tojo et al.'s first and second gas sources.

Gregory discloses a gas switching device, 100, inherently operated by a controller, for use in gas supply systems with first and second gas sources, 102 and 104, respectively in order to have a continuous supply of at least one gas to the processing system/medical unit. See column 3, lines 1-14; See also figure 1. The

It would have been obvious to one of ordinary skill in the art at the time the invention was claimed to use the gas switching device and controller in Gregory in the apparatus of Tojo et al. in order to have a continuous supply of at least one gas to the processing system.

With regard to claim 14, Tojo et al. further discloses a path detector (probes, 8 and 9, with solenoid valves, 51,52,53, 54, 55, 56, 57, 58, with flow meters, 63 and 64) that detects an abnormal state in the gas supply from the cell to the processing system. See column 7, lines 10-30.

With regard to claim 15, modified Tojo et al. discloses all of the claimed limitations as discussed with respect to claim 14 above, wherein the references as combined teach that when the abnormal detection point is detected by the cell detector, 8 or 9, the substitute gas is activated and sent to a processing system (See Tojo et al. - column 13, lines 54-67) by said controller. See Tojo et al. - column 9, lines 29-36.

With regard to claim 16, Tojo et al. discloses an apparatus that generates fluorine gas comprising:

Art Unit: 1709

a) an electrolytic cell, 2, for the electrolysis of hydrogen fluoride to produce fluorine gas, wherein the cell further comprises an electrolytic bath, 3, said bath further comprising hydrogen fluoride-containing molten salt; (See column 6, lines 1-24; See also figure 1)

b) a gas storage means, 18, (See column 6, lines 40-50) comprising a substitute/another gas of nitrogen fluoride (well known semiconductor processing gas in the art) (See also column 1, lines 12-30; See also figure 1); &

c) a path detector (probes, 8 and 9, with solenoid valves, 51,52,53, 54, 55, 56, 57, 58, with flow meters, 63 and 64) that detects an abnormal state in the gas supply from the cell to the processing system; (See column 7, lines 10-30)

However, Tojo et al. fails to explicitly disclose a gas switching section acted upon by a controller in connection with Tojo et al.'s first and second gas sources.

Gregory discloses a gas switching device, 100, inherently operated by a controller, for use in gas supply systems with first and second gas sources, 102 and 104, respectively in order to have a continuous supply of at least one gas to the processing system/medical unit. See column 3, lines 1-14; See also figure 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was claimed to use the gas switching device in Gregory in the apparatus of Tojo et al. in order to have a continuous supply of at least one gas to the processing system.

With regard to claim 17, modified Tojo et al. discloses all of the claimed limitations as discussed with respect to claim 16 above, wherein Tojo et al. further

Art Unit: 1709

discloses a buffer section on the gas supply path/pressurization line, 40, wherein the buffer section comprises: 41, 42 45, 47, 48, to control the pressure and flow rate of the fluorine gas from the cell; and a buffer detector, 45 and 47, situated with the path detector (See figure 1) via the supply path, 40, to detect the status of the buffer section. See column 8, lines 24-50.

With regard to claim 18, modified Tojo et al. discloses all of the claimed limitations as discussed with respect to claim 17 above, wherein Tojo et al. further discloses a compressor, 48, within the buffer section, 41, 42, 45, 47, and 48 that pressurizes the fluorine gas from the cell in the instance when the gas switching device and controller permit only fluorine gas to travel through the supply path, 40; and the buffer detector, 45 and 47, detects the operational status of the compressor. See column 8, lines 24-36.

With regard to claim 19, modified Tojo et al. discloses all of the claimed limitations as discussed with respect to claim 17 above, wherein Tojo et al. further discloses a buffer tank, 44, in the buffer section: wherein the tank temporarily stores fluorine gas from the cell, 2, and the buffer detector, 45 and 47, detects the pressure in the tank. See column 8, lines 24-50.

With regard to claim 20, modified Tojo et al. discloses all of the claimed limitations as discussed with respect to claim 17 above, wherein the references as combined further describe a gas switching section operated by a flow controller from Tojo et al., 35 with 37, 34 and 33 or 36, that supplies fluorine gas to a switching section

Art Unit: 1709

at a given flow rate; and the buffer detector from Tojo et al., 45 and 47, detects the flow rate of fluorine gas at the flow controller. See column 8, lines 36-55.

With regard to claim 23, Tojo et al. discloses a method that generates fluorine gas supplied to a semiconductor processing system (See column 13, lines 54-67) through an apparatus comprising:

a) a fluorine gas generating means comprising: an electrolytic cell, 2, for the electrolysis of hydrogen fluoride to produce fluorine gas, wherein the cell further comprises an electrolytic bath, 3, said bath further comprising hydrogen fluoride-containing molten salt; (See column 6, lines 1-24; See also figure 1)

b) a gas storage means, 18, (See column 6, lines 40-50) comprising a substitute/another gas of nitrogen fluoride (well known semiconductor processing gas in the art) (See also column 1, lines 12-30; See also figure 1); &

c) an electrolytic cell detector, 8 and/or 10, that detects the state/operating conditions of the bath and cell; wherein 8 is a liquid level probe and 10 is a temperature detecting means; (See column 6, lines 1-24; See also figure 1)

However, Tojo et al. fails to explicitly disclose a gas switching section acted upon by a controller in connection with Tojo et al.'s first and second gas sources.

Gregory discloses a gas switching device, 100, inherently operated by a controller, for use in gas supply systems with first and second gas sources, 102 and 104, respectively in order to have a continuous supply of at least one gas to the processing system/medical unit. See column 3, lines 1-14; See also figure 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was claimed to use the gas switching device in Gregory in the apparatus of Tojo et al. in order to have a continuous supply of at least one gas to the processing system.

7. Claims 21-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo et al. (US 6818105) in view of Gregory (US 4450852) as applied to claims 11, 16 and 22 above, and further in view of Hasaka et al. (US 6343627).

With regard to claims 21-22 and 24, modified Tojo et al. discloses all of the claimed limitations as discusses with respect to claims 11, 16 and 22 above, respectively, yet fails to discloses chlorine fluoride (ClF₃) as a semiconductor processing gas.

Hasaka et al. discloses a feed device for large amounts of semiconductor process gas wherein chlorine fluoride (ClF₃) is chosen because of its high purity and safety when used in large amounts. See column 3, lines 17-22; See also column 5, lines 9-12.

It would have been obvious to one of ordinary skill in the art at the time the invention was claimed to use the chlorine trifluoride in Hasaka et al. in the apparatus and method of modified Tojo et al. because of its high purity and safety when used in large amounts.

Art Unit: 1709


Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tayan B. Patel Esq. whose telephone number is (571) 272-9806. The examiner can normally be reached on Monday-Thursday, 7:30-5:00 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Neckel D. Alexa can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TBP



ALEXA D. NECKEL
SUPERVISORY PATENT EXAMINER